

## Appendix 1.

### Analysis of immunogenic regions of PspA protein from *S. Pneumoniae* strain Rx1.

Immunogenic regions are indicated by asterisks underneath the sequence.

[illegible]

Name: surface protein pspA precursor - Streptococcus pneumoniae

Organism: (Streptococcus pneumoniae)

Time and Date: 3:15 pm, March 27, 2000

References: Reference 1:

Journal: J. Bacteriol. (1992) 174:601-609

Residues: 1-619

Reference 2:

Journal: Infect. Immun. (1991) 59:1285-1289

Residues: 32-76

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      10      20      30      40      50
1  EESPVASQSKAEKDYDAAKKDAKNAKKAVEDAQKALDDAKAAQKKYDEDQ  50
    5*****
    3*****                                29*****
      10      20      30      40      50
51 KKTEEKAALEKAASEEMDKAVAAVQQAYLAYQQATDKAAKDAADKMIDEA  100
    ***** 66***** 73*****
                                           78**
      10      20      30      40      50
101 KKREEEAKTKFNTVVRAMVVPEPEQLAETKKKSEEAKQKAPELTKKLEEAK  150
    91***** 95***** 123*****
    **** 101**** 122*****
    89***** 116*****
      10      20      30      40      50
151 AKLEEAEEKKATEAKQKVDAAEVAPQAKIAELENQVHRLEQELKEIDSESES  200
    133***** 140***** 15
    130***** 145*****
      10      20      30      40      50
201 EDYAKEGFRAPLQSKLDAKKAKLSKLEELSDKIDELDAEIAKLEDQLKAA  250
    8***** 168*****
    166***** 1
      10      20      30      40      50
251 EENNNVEDYFKEGLEKTIAAKKAELEKTEADLKKAVNEPEKPAPAPETPA  300
    179***** 185***** 206*****
    76**** 182***** 195*****
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199\*\*\*\*\*

	10	20	30	40	50	
301	PEAPAEQPKPAPAPQAPAPKPEKPAEQPKPEKTTDDQQAEEEDYARRSEEE					350
351	YNRLTQQQPRKAEKPAPAPKTGWKQENGWYFYNTDGSMATGWLQNNGSW					400
401	YYLNSNGAMATGWLQYNGSWYYLNANGAMATGWAKVNGSWYYLNANGAMA					450
451	TGWLQYNGSWYYLNANGAMATGWAKVNGSWYYLNANGAMATGWLQYNGSW					500
501	YYLNANGAMATGWAKVNGSWYYLNANGAMATGWVKDGDWYYLEASGAMK					550
551	ASQWFKVSDKWYYVNLGALAVNTTVDGYKVNANGWV					588

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Motif #: 3                      Range: 6 - 13  
 Motif:    \* [DEGHKNPQRST] [DEHGKNPQRST] [DEHGKNPQRST] [DEHGKNPQRST] \* [DEHGK  
 QRST] \*  
 Ref.: WISHART, D.S. UNPUBLISHED  
 Name: GENERALIZED B CELL EPITOPE PATTERN

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Motif #: 5                      Range: 8 - 15  
 Motif:    \* [DEGHKNPQRST] [DEHGKNPQRST] \* [DEHGKNPQRST] [DEHGKNPQRST] [DEHGK

QRST)\*

Ref.: WISHART, D.S. UNPUBLISHED

Name: GENERALIZED B CELL EPITOPE PATTERN

Motif #: 29 Range: 42 - 49

Motif: \*[DEGHKNPQRST][DEHGKNPQRST][DEHGKNPQRST]\*[DEHGKNPQRST][DEHGK  
QRST)\*

Ref.: WISHART, D.S. UNPUBLISHED

Name: GENERALIZED B CELL EPITOPE PATTERN

Motif #: 52 Range: 49 - 56

Motif: \*[DEGHKNPQRST][DEHGKNPQRST][DEHGKNPQRST][DEHGKNPQRST]\*[DEHGK  
QRST)\*

Ref.: WISHART, D.S. UNPUBLISHED

Name: GENERALIZED B CELL EPITOPE PATTERN

Motif #: 66 Range: 63 - 70

Motif: \*[DEGHKNPQRST][DEHGKNPQRST][DEHGKNPQRST]\*[DEHGKNPQRST][DEHGK  
QRST)\*

Ref.: WISHART, D.S. UNPUBLISHED

Name: GENERALIZED B CELL EPITOPE PATTERN

Motif #: 73 Range: 81 - 88

Motif: \*[DEGHKNPQRST][DEHGKNPQRST]\*[DEHGKNPQRST][DEHGKNPQRST][DEHGK  
QRST)\*

Ref.: WISHART, D.S. UNPUBLISHED

Name: GENERALIZED B CELL EPITOPE PATTERN

Motif #: 78 Range: 97 - 104

Motif: \*[DEGHKNPQRST][DEHGKNPQRST]\*[DEHGKNPQRST][DEHGKNPQRST][DEHGK  
QRST)\*

Ref.: WISHART, D.S. UNPUBLISHED

Name: GENERALIZED B CELL EPITOPE PATTERN

Motif #: 89 Range: 104 - 111

Motif: \*[DEGHKNPQRST][DEHGKNPQRST]\*[DEHGKNPQRST][DEHGKNPQRST][DEHGK  
QRST)\*

Ref.: WISHART, D.S. UNPUBLISHED

Name: GENERALIZED B CELL EPITOPE PATTERN

Motif #: 91 Range: 107 - 114  
 Motif: \*[DEGHKNPQRST][DEHGKNPQRST][DEHGKNPQRST]\*[DEHGKNPQRST][DEHGK  
 QRST]\*  
 Ref.: WISHART, D.S. UNPUBLISHED  
 Name: GENERALIZED B CELL EPITOPE PATTERN

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Motif #: 95 Range: 119 - 125  
 Motif: \*[DEGHKNPQRST][DEHGKNPQRST][DEHGKNPQRST][DEHGKNPQRST][DEHGKN  
 RST]\*  
 Ref.: WISHART, D.S. UNPUBLISHED  
 Name: GENERALIZED B CELL EPITOPE PATTERN

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Motif #: 101 Range: 127 - 133  
 Motif: \*[DEGHKNPQRST][DEHGKNPQRST][DEHGKNPQRST][DEHGKNPQRST][DEHGKN  
 RST]\*  
 Ref.: WISHART, D.S. UNPUBLISHED  
 Name: GENERALIZED B CELL EPITOPE PATTERN

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Motif #: 116 Range: 132 - 139  
 Motif: \*[DEGHKNPQRST][DEHGKNPQRST]\*[DEHGKNPQRST][DEHGKNPQRST][DEHGK  
 QRST]\*  
 Ref.: WISHART, D.S. UNPUBLISHED  
 Name: GENERALIZED B CELL EPITOPE PATTERN

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Motif #: 122 Range: 139 - 146  
 Motif: \*[DEGHKNPQRST][DEHGKNPQRST]\*[DEHGKNPQRST][DEHGKNPQRST][DEHGK  
 QRST]\*  
 Ref.: WISHART, D.S. UNPUBLISHED  
 Name: GENERALIZED B CELL EPITOPE PATTERN

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Motif #: 123 Range: 142 - 149  
 Motif: \*[DEGHKNPQRST][DEHGKNPQRST][DEHGKNPQRST]\*[DEHGKNPQRST][DEHGK  
 QRST]\*  
 Ref.: WISHART, D.S. UNPUBLISHED  
 Name: GENERALIZED B CELL EPITOPE PATTERN

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Motif #: 130 Range: 153 - 160  
 Motif: \*[DEGHKNPQRST][DEHGKNPQRST]\*[DEHGKNPQRST][DEHGKNPQRST][DEHGK  
 QRST]\*  
 Ref.: WISHART, D.S. UNPUBLISHED

Name: GENERALIZED B CELL EPITOPE PATTERN

Motif #: 166 Range: 226 - 233

Motif: \*[DEGHKNPQRST][DEHGKNPQRST]\*[DEHGKNPQRST][DEHGKNPQRST! [DEHGK  
QRST]\*

Ref.: WISHART, D.S. UNPUBLISHED

Name: GENERALIZED B CELL EPITOPE PATTERN

Motif #: 168 Range: 229 - 236

Motif: \*[DEGHKNPQRST][DEHGKNPQRST][DEHGKNPQRST]\*[DEHGKNPQRST! [DEHGK  
QRST]\*

Ref.: WISHART, D.S. UNPUBLISHED

Name: GENERALIZED B CELL EPITOPE PATTERN

Motif #: 176 Range: 250 - 256

Motif: \*[DEGHKNPQRST][DEHGKNPQRST][DEHGKNPQRST][DEHGKNPQRST][DEHGKN  
RST]\*

Ref.: WISHART, D.S. UNPUBLISHED

Name: GENERALIZED B CELL EPITOPE PATTERN

Motif #: 179 Range: 252 - 259

Motif: \*[DEGHKNPQRST][DEHGKNPQRST][DEHGKNPQRST]\*[DEHGKNPQRST][DEHGK  
QRST]\*

Ref.: WISHART, D.S. UNPUBLISHED

Name: GENERALIZED B CELL EPITOPE PATTERN

Motif #: 182 Range: 260 - 267

Motif: \*[DEGHKNPQRST][DEHGKNPQRST][DEHGKNPQRST]\*[DEHGKNPQRST][DEHGK  
QRST]\*

Ref.: WISHART, D.S. UNPUBLISHED

Name: GENERALIZED B CELL EPITOPE PATTERN

Motif #: 185 Range: 261 - 268

Motif: \*[DEGHKNPQRST][DEHGKNPQRST]\*[DEHGKNPQRST][DEHGKNPQRST][DEHGK  
QRST]\*

Ref.: WISHART, D.S. UNPUBLISHED

Name: GENERALIZED B CELL EPITOPE PATTERN

Motif #: 195 Range: 275 - 282

Motif: \*[DEGHKNPQRST][DEHGKNPQRST][DEHGKNPQRST][DEHGKNPQRST]\*[DEHGK  
QRST]\*

Ref.: WISHART, D.S. UNPUBLISHED

Name: GENERALIZED B CELL EPITOPE PATTERN

Motif #: 199 Range: 281 - 290

Motif: \*\*\*[DEHKGK][VAILMFWTY][VAILMFWTY][DEHKGKSTNQ]\*\*\*

Ref.: ROTHBARD, J.B. ET AL., EMBO J. 7:93-101 (1988)

Name: GENERALIZED T CELL EPITOPE PATTERN

Motif #: 206 Range: 288 - 295

Motif: \*[DEGHKNPQRST][DEHGKNPQRST][DEHGKNPQRST][DEHGKNPQRST]\*[DEHGK  
QRST]\*

Ref.: WISHART, D.S. UNPUBLISHED

Name: GENERALIZED B CELL EPITOPE PATTERN